

REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Claims 1-3 and 5-23 are pending. Claims 1-3 and 5-23 have been rejected.

Claim 9 has been amended. Claims 10-11, and 17-23 have been canceled. No claims have been added. Support for the amendments is found in the specification, the drawings, and in the claims as originally filed. Applicants submit that the amendments do not add new matter.

Applicants reserve all rights with respect to the applicability of the Doctrine of Equivalents.

Claims 1-3 and 6-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,250,469 to Tanaka et al. ("Tanaka") in view of U.S. Patent No. 5,617,441 to Nakata et al. ("Nakata").

Claim 1 reads as follows:

A method for alternately contacting two wafer-like component composite arrangements, comprising: bringing the two component composite arrangements, each provided with contact metallizations on their opposing contact surfaces, into a coverage position with their contact metallizations to form contact pairs, in which position the contact metallizations that are to be joined together are pressed against one another, the contact metallizations being thereby contacted by exposing the rear of one of the component composite arrangements to laser radiation, whereby the wavelength of the laser radiation is selected as a function of the degree of absorption of the component composite arrangement exposed to laser radiation at the rear, so that transmission of the laser radiation through the component composite arrangement exposed to the laser radiation at the rear is essentially suppressed or absorption of the laser radiation takes place essentially in the contact metallizations of one or both component composite arrangements, wherein the laser treatment is performed by means of a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs or those combined into groups are exposed to laser radiation for the contacting.

As set forth above, claim 1 includes a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting. The aforementioned limitations are supported by the original specification (p. 4, paragraph 2). Thus the defined activation of selected diode lasers from a composite arrangement permits a laser treatment precisely to the extent needed for contacting of two wafer-like component composite arrangements (the specification, p. 4, paragraph 3). Correspondingly, the component composite arrangement exposed at the rear is heated only to the extent absolutely necessary for contacting. This reduces the possible transfer of further radiation from the first component composite arrangement by absorption to the opposing second component composite arrangement that is provided for contacting (the specification, p. 4, paragraph 3).

The Examiner acknowledged that “Tanaka fails to teach wherein the laser treatment is performed by means of a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs or those combined into groups are exposed to laser radiation for the contacting.” (Office Action, p. 3).

Applicants respectfully submit that Tanaka also fails to disclose a method for alternately contacting two wafer-like component composite arrangements, as recited in claim 1 (emphasis added).

Tanaka discloses IC mounting circuit substrate and process for mounting the IC. More specifically, Tanaka discloses “mounting an IC chip 7 with and on a circuit conductor pattern 2.”(col. 4, lines 14-52, Figures 3-4). In particular, Tanaka discloses that a circuit conductor pattern 2 has junctioning bumps 3, and the IC chip has pads 8 (Figures 3-4).

Thus, Tanaka discloses contacting one single IC chip to a circuit conductor pattern. In contrast, amended claim 1 refers to a method for alternately contacting two wafer-like component composite arrangements, as recited in claim 1. Tanaka does not give the slightest hint to carry out any contacting method on a wafer level, which means to contact two wafer-like component composite arrangements, as recited in claim 1.

Accordingly, Tanaka fails to disclose a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

Nakata, in contrast, discloses a light source unit having a plurality light beams (col. 2, lines 18-21). More specifically, Nakata discloses the following:

A plurality of light emitting units are prepared each of which is provided with a laser diode having a laser diode chip which emits one beam and a collimator lens for converting a beam emitted from the laser diode into a parallel beam. The light emitting units are fixed to a bar body so as to be in a row. A plurality of such bar bodies are prepared, and by fixing the bar bodies to a substrate, the light source units are arranged in a matrix form. The positions of the light emitting units are adjusted and fixed after the light emitting units are fitted in the bar bodies so that a plurality of beams emitted from the laser diodes are in parallel with one another at predetermined intervals.

(Nakata, Abstract)(emphasis added)

Nakata discloses a light source unit exhibiting a composite arrangement of a plurality of diode lasers, as for example depicted in Figs. 24 and 26. The light source unit 10 according to Fig. 6 comprises a plurality of laser diodes 1 assembled with lenses 3 by fixing the laser diodes to a bar body 2, the laser diodes 1 being adjusted in their positions, thus the laser beams B emitted from a plurality of light emitting devices arranged in an array form are irradiated in parallel with one another at predetermined intervals (column 8, second paragraph). According to Nakata, the arrangement of the plurality of laser diodes 1 provides for five parallel laser beams B being irradiated from the light source unit 10 (column 8, lines 11-23, Figure 6). Nakata discloses that the irradiation of the parallel laser beams is performed simultaneously, and thus based on the total of five laser diodes a scanning speed is realized which is five times the scanning speed by the conventional method where scanning is performed by one laser beam B (column 8, lines 11-23, Figure 6).

Obviously there is no hint in Nakata to have only groups of the plurality of diode lasers activated to emit laser radiation, as recited in claim 1. In contrast, amended claim 1 refers to a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

Thus besides that fact that Nakata is not pertinent for the technical field of the pending application, i.e., carrying out a contacting between two wafer-like component composite arrangements, but is directed to the field of laser beam printers and the like

(column 1, lines 9-14), there is not the slightest hint to have a composite arrangement of a plurality of diode lasers offering the choice to activate the diode lasers individually or in groups to emit laser radiation, as recited in claim 1. Furthermore, Nakata does not teach to use the composite arrangement of a plurality of diode lasers in such a way that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

It is respectfully submitted that Tanaka fails to teach or suggest a combination with Nakata, and Nakata fails to teach or suggest a combination with Tanaka. Tanaka teaches mounting the IC. Nakata, in contrast, teaches a light source for printers. It would be impermissible hindsight, based on applicants' own disclosure, to combine Tanaka and Nakata.

Furthermore, even if Tanaka and Nakate were combined, such a combination would still lack a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

Therefore, applicants respectfully submit that claim 1 is not obvious under 35 U.S.C. §103(a) over Tanaka in view of Nakata.

Given that claims 1-3 and 6-8 depend from claim 1, and add additional limitations, applicants respectfully submit that claims 1-3 and 6-8 are not obvious under 35 U.S.C. §103(a) over Tanaka in view of Nakata.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka as modified by Nakata and further in view of U.S. Patent No. 6,762,072 to Lutz (“Lutz”).

Lutz, in contrast, discloses bonding surfaces using a laser beam (Abstract). Lutz fails to disclose, teach, or suggest a a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

It is respectfully submitted that none of Lutz, Tanaka, and Nakata teach or suggest a combination with each other. It would be impermissible hindsight, based on applicants’ own disclosure, to combine Lutz, Tanaka and Nakata.

Furthermore, even if Lutz, Tanaka, and Nakata were combined, such a combination would still lack a composite arrangement of a plurality of diode lasers which are activated individually or in groups to emit laser radiation such that all the contact pairs of the two wafer-like component composite arrangements or those contact pairs of the two wafer-like component composite arrangements combined into groups are exposed to laser radiation for the contacting, as recited in claim 1.

Given that claim 5 depends from amended claim 1 and adds additional limitations, applicants respectfully submit claim 5 is not obvious under 35 U.S.C § 103(a) over Tanaka, in view of Nakata, and further in view of Lutz.

Claims 9-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka in view of Nakata and Lutz.

The Examiner acknowledged that “Tanaka fails to teach a diode laser composite arrangement.” (Office Action, p. 7).

As set forth above, Nakata, in contrast, discloses a light unit having a plurality of laser diodes for use in laser printers. In contrast, amended claim 9 refers to a diode laser composite arrangement that can be activated individually or in groups in such a way that only the diode lasers of the diode laser linear arrangement which are needed for coverage of the respective transverse extent of the contact surface of the component composite arrangement as a function of the distance to be traversed can be activated for acting upon a circular contact surface of the component composite arrangement with the diode laser linear arrangement that can be moved in parallel to the plane of extent of the component composite arrangement.

As set forth above, Lutz discloses bonding surfaces using a laser beam (Abstract), and also fails to disclose aforementioned limitations of amended claim 9.

It is respectfully submitted that none of Lutz, Tanaka, and Nakata teach or suggest a combination with each other. It would be impermissible hindsight, based on applicants’ own disclosure, to combine Lutz, Tanaka and Nakata.

Furthermore, even if Tanaka, Nakata, and Lutz were combined, such a combination would still lack a diode laser composite arrangement that can be activated individually or in groups in such a way that only the diode lasers of the diode laser linear arrangement which are needed for coverage of the respective transverse extent of the contact surface of the component composite arrangement as a function of the distance to be traversed can be activated for acting upon a circular contact surface of the component composite arrangement with the diode laser linear arrangement that can be moved in

parallel to the plane of extent of the component composite arrangement, as recited in claim 9.

Therefore, applicants respectfully submit that claim 9, as amended, is not obvious under 35 U.S.C § 103(a) over Tanaka, in view of Nakata, and further in view of Lutz.

Applicants have canceled claims 10 and 11.

Given that claims 12-15 depend from amended claim 9, and add additional limitations, applicants respectfully submit claims 12-15 are not obvious under 35 U.S.C § 103(a) over Tanaka, in view of Nakata, and further in view of Lutz.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka as modified by Nakata/Lutz and further in view of U.S. Patent No. 4,612,083 to Yasumoto et al. (“Yasumoto”).

Yasumoto, in contrast, discloses fabricating a three-dimensional semiconductor device. Yasumoto fails to disclose a diode laser composite arrangement that can be activated individually or in groups in such a way that only the diode lasers of the diode laser linear arrangement which are needed for coverage of the respective transverse extent of the contact surface of the component composite arrangement as a function of the distance to be traversed can be activated for acting upon a circular contact surface of the component composite arrangement with the diode laser linear arrangement that can be moved in parallel to the plane of extent of the component composite arrangement, as recited in claim 9.

It is respectfully submitted that none of Yasumoto, Lutz, Tanaka, and Nakata teach or suggest a combination with each other. It would be impermissible hindsight, based on applicants' own disclosure, to combine Yasumoto, Lutz, Tanaka and Nakata.

Furthermore, even if Yasumoto, Lutz, Tanaka, and Nakata were combined, such a combination would still lack a diode laser composite arrangement that can be activated individually or in groups in such a way that only the diode lasers of the diode laser linear arrangement which are needed for coverage of the respective transverse extent of the contact surface of the component composite arrangement as a function of the distance to be traversed can be activated for acting upon a circular contact surface of the component composite arrangement with the diode laser linear arrangement that can be moved in parallel to the plane of extent of the component composite arrangement, as recited in claim 9.

Given that claim 16 depends from amended claim 9, and adds additional limitations, applicants respectfully submit claim 16 is not obvious under 35 U.S.C. § 103(a) over Tanaka, in view of Nakata, in view of Lutz, and further in view of Yasumoto.

Claims 17, 18 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka in view of U.S. Publication No. 2003/0146384 to Logsdon et al. (“Logsdon”). Claim 19 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka as modified by Logsdon and further in view of U.S. Publication No. 2003/0207073 to Takezawa et al. (“Takezawa”). Claim 20 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka as modified by Logsdon and further in view of Lutz. Claims 21-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tanaka as modified by Logsdon/Lutz and further in view of U.S. Patent No. 5,858,607 to Burberry et al. (“Burberry”).

Applicants have canceled claims 17-23. Applicants reserve the right to prosecute the canceled claims 17-23 in a divisional application.

It is respectfully submitted that in view of the amendments and arguments set forth herein, the applicable rejections and objections have been overcome. Please charge any shortages and credit any overcharges to our Deposit Account No. 02-2666.

Respectfully submitted,

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